

TATSUNO et al., SN 10/087,784  
Suppl. Amdt./Stmts. of Sub. dated 26 April 2004

520.41386X00/NT0586US  
Page 2

**IN THE CLAIMS:**

1. (Previously Presented) An optical transmitter module, comprising:
  - a laser source to output outgoing light;
  - an etalon positioned to pass part of the outgoing light from the laser source therethrough;
  - a first photo detector positioned to receive the part of the outgoing light passed through the etalon, to produce a first detection signal;
  - a second photo detector positioned to receive another part of the outgoing light not passed through the etalon, to produce a second detection signal;
  - a laser source driver circuit to receive and compare the first detection signal and second detection signal, and to drive and control the laser source to substantially a specific oscillating frequency using feedback based at least in part on a differential between the first detection signal and second detection signal;
  - wherein the etalon includes two plates that sandwich at least one media plate therebetween, and each plate has an optical characteristic allowing transmission of the part of the outgoing light therethrough;
  - wherein the etalon has a construction where:
    - one end of each plate is fixed to the at least one media plate,
    - and the other end extends from the at least one media plate to form a cantilever structure, or
    - a center portion of each plate is fixed to the at least one media plate, and the other portions of the plate extend from the at least one media plate to form a cantilever structure, or

TATSUNO *et al.*, SN 10/087,784  
Suppl. Amdt./Stmts. of Sub. dated 26 April 2004

520.41386X00/NT0586US  
Page 3

the at least one media plate includes first and second media plates, in which one end of each plate is fixed to the first media plate, and the other end of each plate is fixed to the second media plate, whereby the plates and the first and second media plates form an inboard beam structure;

wherein a space between the two plates not having the at least one media plate therebetween, serves as a multiple interference region of the etalon; and wherein each media plate of the at least one media plate is a solid material whose coefficient of thermal expansion is 10-7/ $^{\circ}$ C or less.

2. (Previously Presented) An optical transmitter module according to claim 1, wherein the two plates are optical polished plates.

3. and 4. (Cancelled)

5. (Previously Presented) An optical transmitter module according to claim 1, comprising a semitransparent beam splitter positioned in a path of the outgoing light from the laser source to direct the part of the outgoing light toward the etalon, and to direct the another part of the outgoing light toward the second photo detector.

6. (Previously Presented) An optical transmitter module according to claim 1, wherein either inwardly-facing side of the two plates surrounding the space serving as the multiple interference region has a reflection film thereon, and either outwardly-

TATSUNO et al., SN 10/087,784  
Suppl. Amdt./Stmts. of Sub. dated 26 April 2004

520.41386X00/NT0586US  
Page 4

facing side of the two plates has a substantially non-reflective film, or is a tilted surface with respect to an optical axis of the part of the outgoing light.

7. (Previously Presented) An optical transmitter module according to claim 1, wherein the plate on the incident side of the part of the outgoing light, is a quarter wavelength plate.

8. (Cancelled)

9. (Previously Presented) An optical transmitter module according to claim 1, comprising a condenser to condense the outgoing light from the semiconductor laser source into a condensed light, wherein the etalon has a tilted posture in the condensed light, the condensed light having passed through the etalon is split into two, where a first split light is received by the first photodetector, and a second split light is received by the second photodetector, and the difference of photocurrents of the first and second photodetectors serves as a wavelength error detection signal.

10. (Previously Presented) An optical transmitter module according to claim 1, wherein:

the laser source is mounted on a silicon substrate,  
the silicon substrate has a reflection surface tilted to the optical axis of the outgoing light, to reflect the another part of the outgoing light to the second photo detector.

TATSUNO et al., SN 10/087,784  
Suppl. Amdt./Stmts. of Sub. dat d 26 April 2004

520.41386X00/NT0586US  
Page 5

11. (Previously Presented) An optical transmitter module according to claim 10, wherein at least the laser source and a condensing lens are mounted on the silicon substrate, the reflection surface to reflect the another part of the outgoing light coming from the condensing lens to the second photo detector, and the part of the outgoing light not impinging on the reflection surface passing to the etalon.

12. (Previously Presented) An optical transmitter module according to claim 10, wherein the tilted surface is an etched surface that was formed by means of anisotropic etching with respect to a crystallinity of the silicon substrate.

13. (Previously Presented) An optical transmitter module according to claim 1, wherein the laser source has a light emitting part to output plural light beams of differing wavelengths, and wherein the optical transmitter module comprising a light joiner to join the plural light beams emitted from the light emitting part into a joined outgoing light to act as the outgoing light,

where the etalon positioned to pass part of the joined outgoing light from the laser source therethrough;

the first photo detector positioned to receive the part of the joined outgoing light passed through the etalon, to produce the first detection signal;

the second photo detector positioned to receive the another part of the joined outgoing light not passed through the etalon, to produce the second detection signal; and

the laser source driver circuit to receive and compare the first detection signal and second detection signal, and to drive and control the laser source to

TATSUNO et al., SN 10/087,784  
Suppl. Amdt./Stmts. of Sub. dat d 26 April 2004

520.41386X00/NT0586US  
Page 6

substantially a specific oscillating frequency using feedback based at least in part on the differential between the first detection signal and second detection signal.

14. (Previously Presented) A communication system comprising:
  - at least one input/output unit; and
  - an optical transmitter module including:
    - a laser source to output outgoing light;
    - an etalon positioned to pass part of the outgoing light from the laser source therethrough;
    - a first photo detector positioned to receive the part of the outgoing light passed through the etalon, to produce a first detection signal;
    - a second photo detector positioned to receive another part of the outgoing light not passed through the etalon, to produce a second detection signal;
    - a laser source driver circuit to receive and compare the first detection signal and second detection signal, and to drive and control the laser source to substantially a specific oscillating frequency using feedback based at least in part on a differential between the first detection signal and second detection signal;
    - wherein the etalon includes two plates that sandwich at least one media plate therebetween, and each plate has an optical characteristic allowing transmission of the part of the outgoing light therethrough;
    - wherein the etalon has a construction where:

TATSUNO et al., SN 10/087,784  
Suppl. Amdt./Stmts. of Sub. dated 26 April 2004

520.41386X00/NT0586US  
Pag 7

one end of each plate is fixed to the at least one media plate, and the other end extends from the at least one media plate to form a cantilever structure, or

a center portion of each plate is fixed to the at least one media plate, and other portions of the plate extend from the at least one media plate to form a cantilever structure, or

the at least one media plate includes first and second media plates, in which one end of each plate is fixed to the first media plate, and the other end of each plate is fixed to the second media plate, whereby the plates and the first and second media plates form an inboard beam structure;

wherein a space between the two plates not having the at least one media plate therebetween, serves as a multiple interference region of the etalon; and

wherein each media plate of the at least one media plate is a solid material whose coefficient of thermal expansion is 10-7/°C or less.

15. (Currently Amended) An optical transmitter module The communication system according to claim 14, wherein the two plates are optical polished plates.

16. (Currently Amended) An optical transmitter module The communication system according to claim 14, comprising a semitransparent beam splitter positioned in a path of the outgoing light from the laser source to direct the part of the outgoing

TATSUNO et al., SN 10/087,784  
Suppl. Amdt./Stmts. of Sub. dated 26 April 2004

520.41386X00/NT0586US  
Page 8

light toward the etalon, and to direct the another part of the outgoing light toward the second photo detector.

17. (Currently Amended) An optical transmitter module The communication system according to claim 14, wherein either inwardly-facing side of the two plates surrounding the space serving as the multiple interference region has a reflection film thereon, and

either outwardly-facing side of the two plates has a substantially non-reflective film, or is a tilted surface with respect to an optical axis of the part of the outgoing light.

18. (Currently Amended) An optical transmitter module The communication system according to claim 14, wherein the plate on the incident side of the part of the outgoing light, is a quarter wavelength plate.

19. (Currently Amended) An optical transmitter module The communication system according to claim 14, comprising a condenser to condense the outgoing light from the semiconductor laser source into a condensed light, wherein the etalon has a tilted posture in the condensed light, the condensed light having passed through the etalon is split into two, where a first split light is received by the first photodetector, and a second split light is received by the second photodetector, and the difference of photocurrents of the first and second photodetectors serves as a wavelength error detection signal.

TATSUNO et al., SN 10/087,784  
Suppl. Amdt./Stmts. of Sub. dated 26 April 2004

520.41386X00/NT0586US  
Page 9

20. (Currently Amended) An optical transmitter module The communication system according to claim 14, wherein:

the laser source is mounted on a silicon substrate,  
the silicon substrate has a reflection surface tilted to the optical axis of the outgoing light, to reflect the another part of the outgoing light to the second photo detector.

21. (Currently Amended) An optical transmitter module The communication system according to claim 20, wherein at least the laser source and a condensing lens are mounted on the silicon substrate, the reflection surface to reflect the another part of the outgoing light coming from the condensing lens to the second photo detector, and the part of the outgoing light not impinging on the reflection surface passing to the etalon.

22. (Currently Amended) An optical transmitter module The communication system according to claim 10, wherein the tilted surface is an etched surface that was formed by means of anisotropic etching with respect to a crystallinity of the silicon substrate.

23. (Currently Amended) An optical transmitter module The communication system according to claim 14, wherein the laser source has a light emitting part to output plural light beams of differing wavelengths, and wherein the optical transmitter module comprising a light joiner to join the plural light beams emitted from the light emitting part into a joined outgoing light to act as the outgoing light,

TATSUNO et al., SN 10/087,784  
Suppl. Amdt./Stmts. of Sub. dated 26 April 2004

520.41386X00/NT0586US  
Pag 10

where the etalon positioned to pass part of the joined outgoing light from the laser source therethrough;

the first photo detector positioned to receive the part of the joined outgoing light passed through the etalon, to produce the first detection signal;

the second photo detector positioned to receive the another part of the joined outgoing light not passed through the etalon, to produce the second detection signal; and

the laser source driver circuit to receive and compare the first detection signal and second detection signal, and to drive and control the laser source to substantially a specific oscillating frequency using feedback based at least in part on the differential between the first detection signal and second detection signal.